

# Comparison of Outpatient Laparoscopic Cholecystectomy in a Private Nonteaching Hospital versus a Private Teaching Community Hospital

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## ABSTRACT

The development of laparoscopic cholecystectomy has allowed the introduction of outpatient surgery for biliary tract disease. However, there appears to be a wide variation of the interpretation of "outpatient surgery," ranging from discharge the same day to keeping patients for overnight observation. We prospectively reviewed the last 50 cholecystectomies performed at Spartanburg Regional Medical Center, a private teaching institution, and Upstate Carolina Medical Center, a private nonteaching hospital.

All cholecystectomies were performed by board certified surgeons or surgical residents under the supervision of board certified surgeons. Spartanburg Regional Medical Center's standard was 23-hour observation with 9 patients (18%) being discharged home the day of surgery. Upstate Carolina Medical Center's standard was discharge home (usually 4-8 hours after completion of the procedure) with 39 patients (78%) discharged the same day. No patient discharged the same day presented back with any significant complication. Comorbid disease, biliary pancreatitis, ascending cholangitis, gangrenous gallbladder, extreme age and living conditions and conversion to open were factors considered for admission. Intra-operative difficulty such as oozing, excessive adhesiolysis, postoperative nausea, vomiting or pain control were also indications for overnight admissions.

The extra 15 to 19 hours for routine observation did not change any treatment for any of the 41 patients and resulted in additional cost to the hospital of approximately \$15,000.

We conclude that same day, outpatient laparoscopic cholecystectomy can be done safely with discharge home 4 to 8 hours postoperative without significant morbidity in selective patients.

**Key Words:** Laparoscopic cholecystectomy, Outpatient surgery.

## INTRODUCTION

Since its introduction in 1988, laparoscopic cholecystectomy has progressed to become the most common method of cholecystectomy in the United States.<sup>1,2</sup> It has now become recognized as a procedure that can be safely done as an outpatient procedure.<sup>2-7</sup> However, there is a wide variation as to the definition of outpatient surgery by different surgeons. In several communities it is done as an overnight procedure. We decided to evaluate the safety of same day surgery done in a private nonteaching community hospital and a private teaching community hospital.

## METHODS AND MATERIALS

The last 50 patients undergoing an attempted laparoscopic cholecystectomy from two separate institutions were reviewed. No patients undergoing this procedure were excluded. Patients in the private nonteaching hospital (UCMC) were operated on by a board certified general surgeon independently or with the assistance of another board certified surgeon. Patients in the teaching hospital (SRMC) were operated on by surgical residents with a teaching attendant present. Outpatient surgery is defined as less than 12 hours in the nonteaching community hospital and less than 23 hours in the teaching community hospital.

## RESULTS

Fifty consecutive patients from each hospital were studied. UCMC is a nonteaching private community hospital and SRMC is a community teaching hospital. Patients at both institutions ranged from 6 - 87 years, with a median age of 49 years (**Figure 1**).

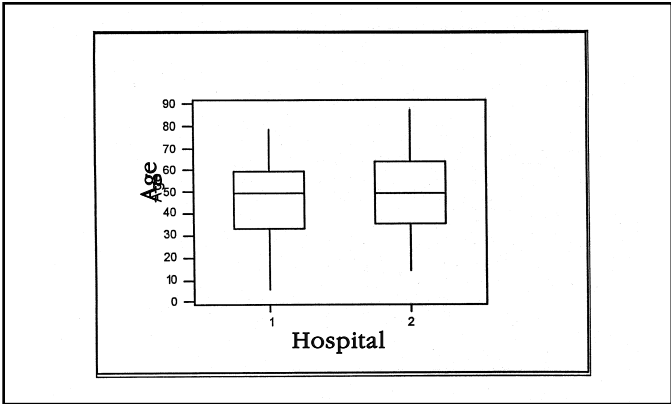
All patients had a history consistent with biliary disease with the diagnosis being confirmed with ultrasound in 98 patients. Two patients were diagnosed with biliary dyskinesia by a positive gallbladder stimulation test. Pathology findings were consistent with cholelithiasis and or cholecystitis in all specimens.

Mean operative time was 79 minutes for UCMC and 99 minutes for SRMC, including conversion to open cholecystectomy. Operative time did not correlate with length of stay (LOS).

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**Figure 1. No age difference between two groups. Median age for each hospital: 49 years**

Forty-eight patients were discharged the same day of surgery. SRMC discharged nine patients (18%), while UCMC discharged 39 (78%) on the same day of surgery. None of these patients presented back with any complication other than a superficial wound infection treated in the office of the attending surgeon. The median LOS for patients at UCMC was six hours. The mean LOS was 10.24 hours with a standard error of the mean of 1.22 hours. For patients at SRMC the median LOS was 25 hours. The mean LOS at SRMC was 38.71 hours with a standard error of the mean of 4.74 hours (**Figure 2**). One patient at SRMC discharged at 22 hours returned five days postoperatively with recurrent symptoms. She was found to have a clipped common bile duct, underwent choledochoduodenostomy and was discharged doing well.

Overnight stays occurred in 11 patients at UCMC. One patient had a questionable stone on intraoperative cholangiogram and was transferred to a facility to undergo ERCP. It was the patient's request not to undergo additional surgery unless absolutely necessary. ERCP was successful

and did not reveal any common bile duct stones. The other 10 patients admitted included one for pain control, three for postoperative nausea, and six for severe comorbid disease (brittle insulin dependent diabetes mellitus, history of severe congestive heart failure, arteriosclerotic heart disease, and a history of postoperative apnea).

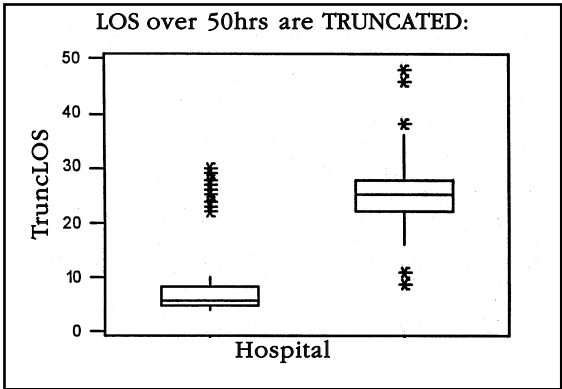
Nine patients required greater than 48 hours admission at SRMC. Two patients were elderly patients who lived alone, three patients required conversion to open cholecystectomy (one for common bile duct exploration and two for lysis of adhesions), one had acute cholecystitis, one had biliary pancreatitis and gangrenous gallbladder, and two patients had multiple medical problems. Their medical problems included a recent cerebrovascular accident, severe insulin dependent diabetes mellitus, idiopathic thrombocytopenia purpura, severe asthma, and steroid dependency.

**DISCUSSION**

Laparoscopic cholecystectomy can be performed safely as an outpatient, same day surgery in selected patients without any serious comorbid medical conditions who have uncomplicated operations. Evaluation of the extra 15 - 19 hours of observation reveals that if the patients have not developed any signs or symptoms in the first 4 - 6 hours after surgery, that this extra time in the hospital is not necessary. It was calculated that same day discharged of 80% of the patients would have resulted in a decrease cost to SRMC of approximately \$200,000 per year.

Discharge at 4 - 6 hours after operation was reported to be the mean at Kaiser Permanente in Los Angeles, CA. Dr. Larissa Tan, staff surgeon at the HMO, recently reported that more than 90% of patients can be safely discharged after laparoscopic cholecystectomy without harm.<sup>7</sup> A tertiary referral center such as SRMC may require overnight or longer admission in up to 20% of all patients, with the majority of those requiring admission being high risk patients.

Selected criteria for same day outpatient surgery is being established across the country.<sup>2</sup> We have shown that good risk patients without comorbid medical problems, who have an uncomplicated operation and do not develop any symptoms in the first 3 - 6 hours after their operation, can be discharged home. Development of postoperative nausea and or vomiting and pain, biliary pancreatitis, ascending cholangitis, gangrenous cholecystitis, extreme age and poor living conditions, intra-operative difficulties, and comorbid medical problems require admission to the hospital. Conversion to open is expected in about 5% of patients.<sup>1</sup>



**Figure 2. Hospital 1: UCMC      Hospital 2: SRMC  
Length of Stay - Significant Difference**

No patients were readmitted acutely after discharge home. The one patient who developed a problem was not symptomatic and would not have had the complication diagnosed with an overnight admission. This study supports the anecdotal information in the literature that most postoperative complications will occur immediately (bleeding, pneumothorax, severe pain, urinary retention) or will require several days to manifest their symptoms (bile leak, abscess, etc.).<sup>2</sup>

## SUMMARY

Comparing 23-hour observation versus 4 - 6 hours for outpatient laparoscopic cholecystectomy, there appears to be no benefit in the additional observation. Approximately 80% of patients undergoing elective laparoscopic cholecystectomy can be discharged safely 4 - 6 hours postoperatively. This will serve to reduce hospital cost and hopefully enhance patient satisfaction.

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